

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2005/019699

International filing date (day/month/year)
03.06.2005

Priority date (day/month/year)
03.06.2004

International Patent Classification (IPC) or both national classification and IPC
F01D21/02, F02C9/28, F02C9/46

Applicant
GOODRICH PUMP & ENGINE CONTROL SYSTEMS, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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10/567174

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2005/019699

1AP20 Rec'd PCT/PTO 03 FEB 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/019699

Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ not paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
 - ☐ the parts relating to claims Nos.

Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-11,13-23
	No: Claims	12
Inventive step (IS)	Yes: Claims	1-11,13-23
	No: Claims	12
Industrial applicability (IA)	Yes: Claims	1-23
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/019699

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

PCT/US2005/019699

Re Item IV

Lack of unity of invention

1. The only technical feature in claim 1, i.e. reducing fuel flow in a first operating range and shutting off fuel flow in a second operating range when an overspeed condition is detected, is not present in independent claim 12. Instead the technical feature of claim 12 is related to two specific control logic paths to detect an overspeed condition. It is obvious that these technical features are not connected by a single inventive concept.

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-4 045 955 (BRANNSTROM ET AL) 6 September 1977 (1977-09-06)
D2: DE 17 51 821 A1 (LICENTIA PATENT-VERWALTUNGS-GMBH; LICENTIA
PATENT-VERWALTUNGS-GMBH, 60) 19 May 1971 (1971-05-19)
D3: US-A-4 454 754 (ZAGRANSKI ET AL) 19 June 1984 (1984-06-19)
D4: GB-A-2 087 978 (ROLLS ROYCE LTD) 3 June 1982 (1982-06-03)

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 12 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document):

A control system for a turboshaft engine comprising means for shutting off fuel flow to the engine when an overspeed condition is detected (cf. abstract), wherein the overspeed condition is detected by first and second control logic paths, the first path including a derivative path (16,17) and a non-derivative path (15) and the second path including a non-derivative path (13).

The subject-matter of independent claim 12 is therefore not new.

3. Independently of document D1, document D2 or D3 discloses a control system for turboshaft engine with derivative paths (proportional to acceleration) and non-derivative paths (proportional to shaft speed). Although in D2 no means for shutting off fuel flow is present (but steam valves) a man skilled in the art would apply the teaching given in D2 to a fuel fired turboshaft engine without an inventive step. In D3 no means for shutting off fuel flow is explicitly mentioned but must be implicitly present to avoid a catastrophic failure of the aircraft engine.
4. The document D4 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

A control system for a turboshaft engine comprising:

- a) means for providing a desired first minimum fuel flow to the engine when an overspeed condition is detected and when the engine is operating in a first operating range (low altitude); and
- b) means for providing a desired second minimum fuel flow to the engine when an overspeed condition is detected and the engine is operating in a second operating range (high altitude).

The subject-matter of claim 1 differs from this known fuel control system in that the fuel is completely shut off in the second operating range.

Although the fuel flow is considerably reduced in D4 at high altitudes it is never completely shut off.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The subject-matter of claim 1 is further considered to be inventive because no document mentioned in the search report has an overspeed limiter with means for

providing a minimum fuel flow and means for shutting off fuel depending on operating range.

5. All other controls systems in independent claims 14 and 23 as well as in dependent claims 2-11, 13-22 include the technical features of claim 1 and the subject-matter of these claims is also new and inventive.
6. The subject-matter of claims 1-23 is considered to have an industrial application.

Re Item VII

Certain defects in the international application

1. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1-D4 is not mentioned in the description, nor are these documents identified therein.

Re Item VIII

Certain observations on the international application

1. Dependent claims 9 and 11 have exactly the same wording leading to a lack in conciseness (Article 6 PCT).